

**SCIENTIFIC ACTIVITIES OF THE
GOVERNMENT OF BRITISH COLUMBIA
1983-1984 SURVEY RESULTS**

MINISTRY OF UNIVERSITIES, SCIENCE AND COMMUNICATIONS

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SCIENTIFIC ACTIVITIES OF THE GOVERNMENT
OF BRITISH COLUMBIA
1983-84 SURVEY RESULTS

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FOREWORD

This is a report on the results of the eighth survey of scientific activities funded by the Government of British Columbia. The report contains 1983-84 (actual) and 1984-85 (estimate). The survey was conducted the week of May 14th by Bert Plaus and Lois Nixon of Statistics Canada with the co-operation and assistance of Mr. B. Stevenson, Director, Science and Technology, Ministry of Universities, Science and Communications, and his staff.

Other provinces taking part in these science surveys are Ontario, Saskatchewan, Alberta, and New Brunswick. Reports for these provinces are available on request from the provincial department sponsoring the survey. A list of the contacts for the various provinces is available on page 78 of this report. National aggregates are published by Statistics Canada in the **Canadian Science Indicators** (Catalogue No. 88-201) and **R&D Expenditures in Canada, 1963-1984**.

The 1984 survey of provincial government scientific activities has produced reasonable indicators of scientific involvement at the ministry or agency level. This success is largely due to the goodwill and efforts of officials of the responding ministries. The assistance provided by the Ministry of Universities, Science and Communications is also gratefully acknowledged.

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The following symbols are used in this report:

- figures are nil or too small to be expressed

NA figures are not available or not applicable

(r) revised figures

(e) estimated figures



HIGHLIGHTS

During the 1983-84 fiscal year B.C. Government expenditures on scientific activities were equal to \$61.8 million. Compared to 1982-83 there is a decrease in the expenditures on science activities, from 1% to 0.7% of total budgetary expenditures. The decline is due to reduced spending on activities in the social sciences.

TEXT TABLE I. B.C. Government Expenditures

Ministry	1982-83		1983-84	
	Total estimated expenditures	Total science expenditures	Total estimated expenditures	Total science expenditures
(\$ millions)				
Energy, Mines & Petroleum Resources	31.9	4.6	25.6	7.2
Environment	87.2	20.5	82.9	17.6
Forests	236.9	11.2	242.6	9.8
Health(1)	2,299.2	5.2	2,450.0	5.0
Industry & Small Business Development	121.8	8.2	140.9	5.3
Provincial Secretary & Government Services	266.4	5.9	259.8	4.1
Universities, Science & Communications(2)	397.1	7.0	389.3	6.6
Other	4,211.6	11.5	4,755.2	6.2
Total	7,652.1	74.1	8,346.3	61.8

(1) Includes expenditures of the Health Care Research Foundation.

(2) Includes expenditures of the Science Council of B.C.

Of the total 1983-84 B.C. Government science expenditures, 78% (\$48.4 million) is for natural science activities. Of this, \$22.8 million is spent on research and development. The remaining \$25.6 million is for related scientific activities. Major support of research and development comes from the ministries of Forests, Universities, Science and Communications, Science Council, Health Care Research Foundation and Environment. The technical surveys activity is the major related scientific activity, supported mainly by the Ministry of Environment.

It has been estimated that the social sciences account for 22% (\$13.4 million) of the total 1983-84 B.C. Government science expenditure. The ministries of Industry & Small Business Development and Provincial Secretary & Government Services are the major supporters of social science activities.

TEXT TABLE II. B.C. Government Expenditures on Science by Activity, 1977-78 to 1983-84

Activity	1977-78(r)	1978-79(r)	1979-80(r)	1980-81(r)	1981-82	1982-83	1983-84
	(\$ millions)						
R&D	6.8	9.6	18.0	26.7	26.1	24.5	23.2
RSA	24.2	27.3	32.9	44.7	45.7	48.1	37.7
Capital expenditures	1.4	1.2	1.2	1.9	1.5	1.5	0.9
Total	32.4	38.1	52.1	73.3(1)	73.3	74.1	61.8

(1) Does not include a one time grant of \$14.4 million to the Discovery Foundation nor a \$2 million equipment grant to the university sector made by the Ministry of Universities, Science and Communications.

The provincial government itself performed 53% of R&D activities and 75% of related scientific activities in 1983-84. The remainder is performed extramurally. Industry is the largest extramural performer, receiving \$9.7 million in support of science, the university sector is next, receiving \$5.6 million.

TEXT TABLE III. B.C. Government Expenditures on Science, by Activity and Performer, 1983-84

Activity	Intramural	Industry	Universities	B.C. Research Council	Other	Total
(\$ millions)						
Current expenditures:						
R&D	12.2	2.2	5.4	1.2	2.2	23.2
RSA	28.4	7.5	0.2	0.6	1.0	37.7
Capital expenditures	0.9	NA	NA	NA	NA	0.9
Total	41.5	9.7	5.6	1.8	2.9	61.8

Note: In this report the science expenditures of the B.C. Research Council reflects only the yearly grant from the B.C. government. Additional information on the BCRC is available in *Science Statistics*, catalogue No 88-001, Vol 8, No 11.

Personnel involved in science activities total 1,079. This is approximately 3% of the total B.C. Government full-time equivalent employment.

TEXT TABLE IV. Personnel Engaged in B.C. Government Scientific Activities, by Category and Ministry, 1983-84

Ministry	Scientific and professional	Technical	Other	Total
	FTE (1)			
Attorney General	6	2	3	11
Energy, Mines & Petroleum Resources	39	12	14	65
Environment	106	278	53	437
Forests	92	104	32	228
Health	17	2	19	38
Industry & Small Business Development	55	5	25	85
Provincial Secretary & Government Services	45	46	22	113
Other	51	15	36	102
Total	411	464	204	1,079

(1) FTE - The employment of one person for one full year or the equivalent thereof.

Objectives of scientific expenditures by the B.C. Government are shown in Text Table V. The objective with the largest expenditures in 1983-84 is industrial and economic development. The four major ministries supporting this objective are Forests, Environment, Industry & Small Business Development, and Universities, Science and Communications.

TEXT TABLE V. Objectives of B.C. Government Science Expenditures, by Ministry, 1983-84

Ministry	Energy & Fuels	Environmental issues	Health	Industrial & economic development	Social development & related areas	Other	Total
(\$ millions)							
Energy, Mines & Petroleum Resources	4.8	-	-	2.4	-	-	7.2
Environment	0.3	6.8	0.1	6.8	3.1	0.4	17.5
Forests	-	-	-	9.8	-	-	9.8
Health(1)	-	-	5.0	-	-	-	5.0
Industry & Small Business Development	0.2	-	0.2	4.0	0.8	0.2	5.4
Provincial Secretary & Government Services	-	-	-	-	3.5	0.6	4.1
Universities, Science & Communications(2)	0.4	-	-	5.2	-	1.0	6.6
Other	-	0.1	-	2.1	3.5	0.5	6.2
Total	5.7	6.9	5.3	30.3	10.9	2.7	61.8

(1) Includes expenditures of the Health Care Research Foundation.

(2) Includes expenditures of the Science Council of B.C.

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Natural Sciences



Government of British Columbia

TABLE 1. Total Expenditures in the Natural Sciences, by Activity, 1977-78 to 1984-85

Activity	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
(\$'000)								
Research & development:								
In-house	4,366	5,032	5,988	11,427	12,096	12,297	11,222	11,228
Contracts	733	1,427	3,766	2,184	2,139	1,684	1,709	1,950
Grants	830	1,836	6,538	26,295(1)	10,288	8,679	8,666	8,145
Research fellowships	-	240	460	472	859	1,070	1,042	1,078
Sub-total	5,929	8,535	16,752	40,378	25,382	23,730	22,639	22,401
Related scientific activities:								
Education support	110	123	179	243	233	166	172	131
Technical surveys	5,834	8,709	12,837	14,836	15,689	16,989	15,437	16,438
Information services	1,419	1,409	1,763	2,404	2,685	3,441	3,058	2,530
Special services & studies	4,686	3,205	2,984	4,413	4,434	4,181	6,228	1,101
Museum services	886	987	977	1,093	1,015	891	517	513
Sub-total	12,935	14,433	18,740	22,989	24,056	25,668	25,412	20,713
Capital expenditures:								
Research & development ...	184	351	357	2,276(2)	296	444	193	138
Related scientific activities	1,104	675	523	766	535	383	170	203
Sub-total	1,288	1,026	880	3,042	831	827	363	341
Total	20,152	23,994	36,372	66,409	50,269	50,225	48,414	43,455

(1) Includes \$14.4 million grant to Discovery Foundation.

(2) Includes \$2.0 million research equipment grant to Universities in B.C.

Government of British Columbia

TABLE 2. Total Expenditures in the Natural Sciences, by Ministry or Agency, 1977-78 to 1984-85

Ministry or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Agriculture & Food	788	1,243	1,519	1,558	1,785	1,760	1,996	1,950
Economic Development	320	320	NA	NA	NA	NA	NA	NA
Education, Science & Technology	NA	724	NA	NA	NA	NA	NA	NA
Energy, Mines & Petroleum Resources	NA	2,469	3,863	4,493	4,845	4,637	7,214	3,111
Energy, Transport & Communications	951	NA	NA	NA	NA	NA	NA	NA
Environment	8,074	9,525	14,886	18,280	19,304	20,456	17,546	17,520
Forests	4,087	6,127	7,318	13,240	10,937	11,097	9,764	9,578
Health	384	-	83	43	65	25	348	602
Health Care Research Foundation	NA	1,332	3,449	3,556	3,033	3,372	3,532	3,650
Highways	292	NA	NA	NA	NA	NA	NA	NA
Industry & Small Business Development	NA	NA	420	-	-	-	-	-
Lands, Parks & Housing	NA	100	76	104	12	321	298	294
Mines & Petroleum Resources	2,318	NA	NA	NA	NA	NA	NA	NA
Municipal Affairs & Housing	105	NA	NA	NA	NA	NA	NA	NA
Provincial Secretary & Government Services	NA	1,460	1,480	1,640	1,640	1,390	950	950
Provincial Secretary & Travel Industry	1,352	NA	NA	NA	NA	NA	NA	NA
Recreation & Conservation ..	1,481	NA	NA	NA	NA	NA	NA	NA
Science Council of B.C.	NA	NA	NA	5,000	5,840	4,209	4,002	3,450
Transportation, Communications & Highways	NA	694	NA	NA	NA	NA	NA	NA
Transportation & Highways ..	NA	NA	202	120	151	173	150	150
Universities, Science & Communications	NA	NA	3,076	18,375(1)	2,657	2,785	2,614	2,200
Total	20,152	23,994	36,372	66,409	50,269	50,225	48,414	43,455

(1) Includes \$14.4 million grant to Discovery Foundation.

Government of British Columbia

TABLE 3. Total Expenditures in the Natural Sciences, by Performer, 1977-78 to 1984-85

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Intramural	17,432	19,089	25,092	33,999	33,532	35,825	31,199	31,147
Industry	1,150	1,651	4,340	5,421	6,066	5,045	7,836	3,656
Universities	770	1,651	5,517	9,129	6,138	5,270	5,356	5,284
Hospitals & health organizations	-	123	164	279	124	203	315	320
B.C. Research Council ..	328	320	627	1,874	1,914	1,789	1,586	1,084
Other	472	1,160	632	15,707(1)	2,495	2,093	2,122	1,964
Total	20,152	23,994	36,372	66,409	50,269	50,225	48,414	43,455

(1) Includes \$14.4 million grant to Discovery Foundation.

Government of British Columbia

TABLE 4. Current Expenditures on R&D in the Natural Sciences, by Performer, 1977-78 to 1984-85

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Intramural	4,499	5,331	6,918	12,004	12,732	12,821	11,695	11,697
Industry	78	451	3,366	2,147	2,938	2,299	2,238	2,159
Universities	670	1,485	5,482	9,061	6,127	5,270	5,356	5,284
Hospitals & health organizations	-	123	164	279	124	203	315	320
B.C. Research Council .	320	320	627	1,874	1,494	1,227	1,147	1,079
Other	362	825	195	15,013(1)	1,967	1,910	1,888	1,862
Total	5,929	8,535	16,752	40,378	25,382	23,730	22,639	22,401

(1) Includes \$14.4 million grant to Discovery Foundation.

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TABLE 5. Current Expenditures on R&D in the Natural Sciences, by Ministry or Agency, 1977-78 to 1984-85

Ministry or Agency	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(\$'000)							
Agriculture & Food	120	531	682	682	831	577	695	660
Economic Development	320	320	NA	NA	NA	NA	NA	NA
Education, Science & Technology	NA	424	NA	NA	NA	NA	NA	NA
Energy, Mines & Petroleum Resources	NA	905	2,387	1,479	1,370	1,290	1,393	1,392
Energy, Transport & Communications	-	NA	NA	NA	NA	NA	NA	NA
Environment	220	1,106	1,865	2,160	2,170	2,214	1,789	1,937
Forests	2,989	3,376	4,364	8,846	9,626	9,492	8,515	8,350
Health	350	-	83	43	5	5	305	531
Health Care Research Foundation	NA	1,332	3,449	3,556	3,033	3,372	3,532	3,650
Highways	195	NA	NA	NA	NA	NA	NA	NA
Industry & Small Business Development	NA	NA	420	-	-	-	-	-
Lands, Parks & Housing	NA	-	-	-	-	5	-	5
Mines & Petroleum Resources	911	NA	NA	NA	NA	NA	NA	NA
Municipal Affairs & Housing	30	NA	NA	NA	NA	NA	NA	NA
Provincial Secretary & Government Services	NA	360	380	420	420	410	320	320
Provincial Secretary & Travel Industry	335	NA	NA	NA	NA	NA	NA	NA
Recreation & Conservation ..	459	NA	NA	NA	NA	NA	NA	NA
Science Council of B.C.	NA	NA	NA	5,000	5,840	4,209	3,890	3,350
Transportation, Communications & Highways	NA	181	NA	NA	NA	NA	NA	NA
Transportation & Highways ..	NA	NA	52	48	54	48	40	40
Universities, Science & Communications	NA	NA	3,070	18,144(1)	2,033	2,108	2,160	2,166
Total	5,929	8,535	16,752	40,378	25,382	23,730	22,639	22,401

(1) Includes \$14.4 million grant to Discovery Foundation.

Government of British Columbia

TABLE 6. Ministerial Personnel Engaged in Scientific Activities in the Natural Sciences, by Activity and Category, 1977-78 to 1984-85

Activity and Category	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85(e)
	(person-years)							
Research & development:								
Scientific & professional	72	81	110	132	134	147	135	127
Technical	61	66	71	144	148	135	115	117
Other	35	36	47	30	42	40	40	34
Sub-total	168	183	228	306	324	322	290	278
Related scientific activities:								
Scientific & professional	182	178	187	144	162	143	138	122
Technical	286	302	365	399	410	346	306	278
Other	93	89	93	81	84	82	80	70
Sub-total	561	569	645	624	656	571	524	470
Total natural science activities:								
Scientific & professional	254	259	297	276	296	290	273	249
Technical	347	368	436	543	558	481	421	395
Other	128	125	140	111	126	122	120	104
Total	729	752	873	930	980	893	814	748

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TABLE 7. Total Expenditures in the Natural Sciences, by Sources of Funds, 1983-84

Ministry or Agency	Ministerial budget	Transfers from other ministries	Transfers from federal government	From other sources	Total
	(\$'000)				
Agriculture & Food	1,711	-	285	-	1,996
Energy, Mines & Petroleum Resources	5,321	-	1,893	-	7,214
Environment	17,094	260	100	92	17,546
Forests	9,520	122	122	-	9,764
Health	323	-	25	-	348
Health Care Research Foundation	-	-	-	3,532(1)	3,532
Lands, Parks & Housing	298	-	-	-	298
Provincial Secretary & Government Services	950	-	-	-	950
Science Council of B.C.	-	4,002(2)	-	-	4,002
Transportation & Highways	150	-	-	-	150
Universities, Science & Communications	2,614	-	-	-	2,614
Total	37,981	4,384	2,425	3,624	48,414

(1) Transferred from the B.C. Lotteries Fund.

(2) Transferred from the Ministry of Universities, Science and Communications.

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TABLE 8. Total Expenditures in the Natural Sciences, by Activity and Performer, 1983-84

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
(\$'000)							
Research & development:							
In-house	11,222	NA	NA	NA	NA	NA	11,222
Contracts	34	595	330	-	10	740	1,709
Grants	421	1,548	4,097	315	1,137	1,148	8,666
Research fellowships	18	95	929	-	-	-	1,042
Sub-total	11,695	2,238	5,356	315	1,147	1,888	22,639
Related scientific activities:							
Education support	132	-	-	-	-	40	172
Technical surveys	14,223	1,214	-	-	-	-	15,437
Information services	2,869	30	-	-	-	159	3,058
Special services & studies ..	1,400	4,354	-	-	439	35	6,228
Museum services	517	-	-	-	-	-	517
Sub-total	19,141	5,598	-	-	439	234	25,412
Capital expenditures:							
Research & development	193	NA	NA	NA	NA	NA	193
Related scientific activities	170	NA	NA	NA	NA	NA	170
Sub-total	363	NA	NA	NA	NA	NA	363
Total	31,199	7,836	5,356	315	1,586	2,122	48,414

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TABLE 9. Total Expenditures in the Natural Sciences, by Ministry or Agency and Performer, 1983-84

Ministry or Agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
	(\$'000)						
Agriculture & Food	1,301	530	150	-	-	15	1,996
Energy, Mines & Petroleum Resources	2,754	4,365	5	-	-	90	7,214
Environment	16,174	1,252	17	-	-	103	17,546
Forests	8,841	46	158	-	10	709	9,764
Health	171	-	152	25	-	-	348
Health Care Research Foundation	124	-	3,118	290	-	-	3,532
Lands, Parks & Housing	298	-	-	-	-	-	298
Provincial Secretary & Government Services	950	-	-	-	-	-	950
Science Council of B.C. ...	356	1,643	1,756	-	92	155	4,002
Transportation & Highways .	150	-	-	-	-	-	150
Universities, Science & Communications(1)	80	-	-	-	1,484	1,050	2,614
Total	31,199	7,836	5,356	315	1,586	2,122	48,414

(1) Excludes \$4.2 million granted to the Science Council of B.C.

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TABLE 10. Current Expenditures in the Natural Sciences, by Ministry or Agency and Activity, 1983-84

Ministry or Agency	Research & development	Education support	Technical surveys	Information services	Special services & studies	Museum services	Total
	(\$'000)						
Agriculture & Food	695	-	-	1,212	89	-	1,996
Energy, Mines & Petroleum Resources	1,393	70	804	605	4,322	5	7,199
Environment	1,789	-	13,838	940	805	1	17,373
Forests	8,515	-	591	78	405	-	9,589
Health	305	-	-	-	43	-	348
Health Care Research Foundation	3,532	-	-	-	-	-	3,532
Lands, Parks & Housing	-	12	204	6	15	61	298
Provincial Secretary & Government Services	320	90	-	90	-	450	950
Science Council of B.C.	3,890	-	-	112	-	-	4,002
Transportation & Highways .	40	-	-	-	110	-	150
Universities, Science & Communications	2,160	-	-	15	439	-	2,614
Total	22,639	172	15,437	3,058	6,228	517	48,051

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TABLE 11. Current Expenditures on R&D in the Natural Sciences, by Ministry or Agency and Performer, 1983-84

Ministry or Agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
(\$'000)							
Agriculture & Food	-	530	150	-	-	15	695
Energy, Mines & Petroleum Resources	1,388	-	5	-	-	-	1,393
Environment	1,651	26	17	-	-	95	1,789
Forests	7,623	39	158	-	10	685	8,515
Health	128	-	152	25	-	-	305
Health Care Research Foundation	124	-	3,118	290	-	-	3,532
Land, Parks & Housing	-	-	-	-	-	-	-
Provincial Secretary & Government Services	320	-	-	-	-	-	320
Science Council of B.C.	356	1,643	1,756	-	92	43	3,890
Transportation & Highways ..	40	-	-	-	-	-	40
Universities, Science & Communications	65	-	-	-	1,045	1,050	2,160
Total	11,695	2,238	5,356	315	1,147	1,888	22,639

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TABLE 12. Detail of Intramural Expenditures in the Natural Sciences, 1983-84

Ministry or Agency	Current expenditures		Capital expenditures	Total
	Personnel costs	Other costs		
	(\$'000)			
Agriculture & Food	1,041	260	-	1,301
Energy, Mines & Petroleum Resources	2,455	284	15	2,754
Environment	12,579	3,422	173	16,174
Forests	6,817	1,849	175	8,841
Health	164	7	-	171
Health Care Research Foundation	-	124	-	124
Lands, Parks & Housing	198	100	-	298
Provincial Secretary & Government Services	900	50	-	950
Science Council of B.C.	240	116	-	356
Transportation & Highways	142	8	-	150
Universities, Science & Communications	59	21	-	80
Total	24,595	6,241	363	31,199

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TABLE 13. Ministerial Personnel Engaged in Scientific Activities in the Natural Sciences, by Ministry or Agency, 1983-84

Ministry or Agency	Research & development			Related scientific activities		
	Scientific & professional	Technical	Other	Scientific & professional	Technical	Other
(person-years)						
Agriculture & Food	-	-	-	8	9	14
Energy, Mines & Petroleum Resources	11	1	-	28	11	14
Environment	22	23	5	83	255	48
Forests	86	87	30	6	17	2
Health	5	-	-	2	-	-
Health Care Research Foundation	-	-	-	-	-	-
Lands, Parks & Housing ...	-	-	-	4	4	-
Provincial Secretary & Government Services	4	3	-	5	9	2
Science Council of B.C. ..	6	-	4	-	-	-
Transportation & Highways	-	1	-	2	1	-
Universities, Science & Communications	1	-	1	-	-	-
Total	135	115	40	138	306	80
		290				524

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TABLE 14. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1983-84

Ministry or Agency	Advancement of science	Communications	Energy & fuels			Environmental issues	Health
			Fossil fuels	Hydro electric energy	Other		
(\$'000)							
Agriculture & Food	-	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	450	-	4,315	-	-
Environment	74	-	200	100	-	6,847	140
Forests	-	-	-	-	-	-	-
Health	-	-	-	-	-	-	348
Health Care Research Foundation	-	-	-	-	-	-	3,532
Lands, Parks & Housing	100	-	-	-	-	56	-
Provincial Secretary & Government Services	320	-	-	-	-	-	-
Science Council of B.C.	-	232	189	-	202	-	-
Transportation & Highways ..	-	-	-	-	-	-	-
Universities, Science & Communications	65	-	-	-	75	-	-
Total	559	232	839	100	4,592	6,903	4,020

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TABLE 14. Objectives of Expenditures in the Natural Sciences, by Ministry or Agency, 1983-84 - Continued

Ministry or Agency	Industrial & economic development					
	Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
	(\$'000)					
Agriculture & Food	1,996	-	-	-	-	-
Energy, Mines & Petroleum Resources	-	-	-	-	2,449	-
Environment	310	1,467	1,530	-	200	3,278
Forests	-	-	9,686	-	-	78
Health	-	-	-	-	-	-
Health Care Research Foundation	-	-	-	-	-	-
Land, Parks & Housing	-	-	-	-	-	95
Provincial Secretary & Government Services	-	-	-	-	-	-
Science Council of B.C.	458	674	653	1,160	229	-
Transportation & Highways ...	-	-	-	-	-	-
Universities, Science & Communications	254	500	-	1,050	231	-
Total	3,018	2,641	11,869	2,210	3,109	3,451

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TABLE 14. Objectives of Expenditures in the National Sciences, by Ministry or Agency, 1983-84 - Concluded

Ministry or Agency	Social development & related areas			Transportation	Other	Total
	Culture, sport & recreation	Urban & regional studies				
	(\$'000)					
Agriculture & Food	-	-	-	-	-	1,996
Energy, Mines & Petroleum Resources	-	-	-	-	-	7,214
Environment	500	2,600	300	-	-	17,546
Forests	-	-	-	-	-	9,764
Health	-	-	-	-	-	348
Health Care Research Foundation	-	-	-	-	-	3,532
Land, Parks & Housing	47	-	-	-	-	298
Provincial Secretary & Government Services	630	-	-	-	-	950
Science Council of B.C. ...	-	-	205	-	-	4,002
Transportation & Highways .	-	-	150	-	-	150
Universities, Science & Communications	-	-	-	439	-	2,614
Total	1,177	2,600	655	439	439	48,414

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TABLE 15. Objectives of Expenditures in the Natural Sciences, by Objective and Activity, 1983-84

Objective	Intramural		Extramural		Total
	Research & development	Related scientific activities	Research & development	Related scientific activities	
(\$'000)					
Advancement of science	385	174	-	-	559
Communications	21	-	211	-	232
Energy & fuels:					
Fossil fuels	7	650	70	112	839
Hydro electric energy	-	100	-	-	100
Other.....	18	15	244	4,315	4,592
Environmental issues	460	6,428	15	-	6,903
Health	252	183	3,585	-	4,020
Industrial & economic development:					
Agriculture	42	1,611	1,365	-	3,018
Fisheries	789	513	1,209	130	2,641
Forestry	7,851	2,575	1,436	7	11,869
Manufacturing	106	-	2,104	-	2,210
Minerals	1,409	1,116	444	140	3,109
Other	489	2,859	75	28	3,451
Social development & related areas:					
Culture, sport & recreation	-	1,177	-	-	1,177
Urban & regional studies	-	1,500	-	1,100	2,600
Transportation	59	410	186	-	655
Other	-	-	-	439	439
Total	11,888	19,311	10,944	6,271	48,414

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TABLE 16. Total Expenditures in the Natural Sciences, by Activity and Performer, 1984-85(e)

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
(\$'000)							
Research & development:							
In-house	11,228	NA	NA	NA	NA	NA	11,228
Contracts	35	742	363	-	-	810	1,950
Grants	416	1,322	3,956	320	1,079	1,052	8,145
Research fellowships	18	95	965	-	-	-	1,078
Sub-total	11,697	2,159	5,284	320	1,079	1,862	22,401
Related scientific activities:							
Education support	131	-	-	-	-	-	131
Technical surveys	14,981	1,457	-	-	-	-	16,438
Information services	2,385	40	-	-	5	100	2,530
Special services & studies ..	1,099	-	-	-	-	2	1,101
Museum services	513	-	-	-	-	-	513
Sub-total	19,109	1,497	-	-	5	102	20,713
Capital expenditures:							
Research & development	138	NA	NA	NA	NA	NA	138
Related scientific activities	203	NA	NA	NA	NA	NA	203
Sub-total	341	NA	NA	NA	NA	NA	341
Total	31,147	3,656	5,284	320	1,084	1,964	43,455

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TABLE 17. Total Expenditures in the Natural Sciences, by Ministry or Agency and Performer, 1984-85(e)

Ministry or Agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
	(\$'000)						
Agriculture & Food	1,290	500	150	-	-	10	1,950
Energy, Mines & Petroleum							
Resources	2,826	285	-	-	-	-	3,111
Environment	15,943	1,428	19	-	-	130	17,520
Forests	8,810	26	55	-	5	682	9,578
Health	289	-	293	20	-	-	602
Health Care Research							
Foundation	150	-	3,200	300	-	-	3,650
Land, Parks & Housing	289	-	-	-	-	5	294
Provincial Secretary & Government Services	950	-	-	-	-	-	950
Science Council of B.C.	250	1,417	1,567	-	79	137	3,450
Transportation & Highways .	150	-	-	-	-	-	150
Universities, Science & Communications	200	-	-	-	1,000	1,000	2,200
Total	31,147	3,656	5,284	320	1,084	1,964	43,455

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TABLE 18. Current Expenditures in the Natural Sciences, by Ministry or Agency and Activity, 1984-85(e)

Ministry or Agency	Research & development	Education support	Technical surveys	Information services	Special services & studies	Museum services	Total
Agriculture & Food	660	-	-	1,200	90	-	1,950
Energy, Mines & Petroleum Resources	1,392	28	921	690	50	-	3,081
Environment	1,937	-	14,648	366	280	1	17,232
Forests	8,350	-	661	78	466	-	9,555
Health	531	-	-	-	71	-	602
Health Care Research Foundation	3,650	-	-	-	-	-	3,650
Lands, Parks & Housing	5	13	208	6	-	62	294
Provincial Secretary & Government Services	320	90	-	90	-	450	950
Science Council of B.C. ...	3,350	-	-	100	-	-	3,450
Transportation & Highways .	40	-	-	-	110	-	150
Universities, Science & Communications	2,166	-	-	-	34	-	2,200
Total	22,401	131	16,438	2,530	1,101	513	43,114

(\$'000)

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TABLE 19. Current Expenditures on R&D in the Natural Sciences, by Ministry or Agency and Performer, 1984-85(e)

Ministry or Agency	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
	(\$'000)						
Agriculture & Food	-	500	150	-	-	10	660
Energy, Mines & Petroleum Resources	1,392	-	-	-	-	-	1,392
Environment	1,572	216	19	-	-	130	1,937
Forests	7,589	26	55	-	-	680	8,350
Health	218	-	293	20	-	-	531
Health Care Research Foundation	150	-	3,200	300	-	-	3,650
Land, Parks & Housing	-	-	-	-	-	5	5
Provincial Secretary & Government Services	320	-	-	-	-	-	320
Science Council of B.C.	250	1,417	1,567	-	79	37	3,350
Transportation & Highways ..	40	-	-	-	-	-	40
Universities, Science & Communications	166	-	-	-	1,000	1,000	2,166
Total	11,697	2,159	5,284	320	1,079	1,862	22,401

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TABLE 20. Ministerial Personnel Engaged in Scientific Activities in the Natural Sciences, by Ministry or Agency, 1984-85(e)

Ministry or Agency	Research & development			Related scientific activities			
	Scientific & professional	Technical	Other	Total	Scientific & professional	Technical	Other
	(person-years)						
Agriculture & Food	-	-	-	-	8	8	14
Energy, Mines & Petroleum Resources	11	1	-	12	28	11	15
Environment	22	16	4	42	66	226	37
Forests	78	96	25	199	7	19	2
Health	6	-	-	6	2	-	-
Health Care Research Foundation	-	-	-	-	-	-	-
Lands, Parks & Housing	-	-	-	-	4	4	-
Provincial Secretary & Government Services	4	3	-	7	5	9	2
Science Council of B.C. ...	4	-	3	7	-	-	-
Transportation & Highways .	-	1	-	1	2	1	-
Universities, Science & Communications	2	-	2	4	-	-	-
Total	127	117	34	278	122	278	70
							470

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Social Sciences and Humanities



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TABLE 21. Total Expenditures in the Social Sciences and Humanities, by Activity, 1977-78 to 1984-85

Activity	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83(e)	1983-84	1984-85(e)
(\$'000)								
Research and development:								
Current expenditures:								
In house	741	972	1,094	713	730	732	519	540
Contracts	98	79	83	10	10	10	18	18
Grants	30	30	30	21	20	-	-	-
Sub-total	869	1,081	1,207	744	760	742	537	558
Capital expenditures	11	18	15	20	20	20	2	1
Related scientific activities:								
Current expenditures	11,290	12,903	14,247	21,736	21,651	22,411	12,274	12,470
Capital expenditures	54	144	282	866	691	655	584	560
Total	12,224	14,146	15,751	23,366	23,122	23,828	13,397	13,589

TABLE 22. Total Expenditures in the Social Sciences and Humanities, by Ministry, 1977-78 to 1984-85

Ministry	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83(e)	1983-84	1984-85(e)
	(\$'000)							
Attorney General	671	910	1,015	1,280	1,330	1,369	680	696
Consumer & Corporate Affairs	214	356	469	443	616	562	539	450
Economic Development	3,172	3,625	NA	NA	NA	NA	NA	NA
Education	2,113	NA	1,727	1,767	1,907	1,897	1,160	900
Education, Science & Technology	NA	1,999	NA	NA	NA	NA	NA	NA
Energy, Mines & Petroleum Resources	NA	254	238	-	-	-	-	-
Energy, Transport & Communications	489	NA	NA	NA	NA	NA	NA	NA
Environment	169	221	372	10	65	90	35	13
Finance	30	40	115	1,299	2,052	2,277	-	-
Forests	20	12	22	91	233	142	-	-
Health	868	1,217	1,674	1,475	1,686	1,755	1,088	1,134
Highways	26	NA	NA	NA	NA	NA	NA	NA
Human Resources	NA	140	NA	NA	NA	NA	NA	NA
Industry & Small Business Development	NA	NA	5,107	11,037	8,240	8,240	5,348	5,348
Labour	701	392	508	564	1,208	1,236	157	157
Lands, Parks & Housing	NA	235	309	270	192	225	322	404
Mines & Petroleum Resources	119	NA	NA	NA	NA	NA	NA	NA
Municipal Affairs	NA	424	497	539	274	351	389	391
Municipal Affairs & Housing	412	NA	NA	NA	NA	NA	NA	NA
Provincial Secretary & Government Services	NA	3,627	3,508	3,978	4,257	4,471	3,161	3,453
Provincial Secretary & Travel Industry	2,354	NA	NA	NA	NA	NA	NA	NA
Recreation & Conservation ..	866	NA	NA	NA	NA	NA	NA	NA
Tourism	NA	NA	72	181	261	300	323	393
Tourism & Small Business Development	NA	570	NA	NA	NA	NA	NA	NA
Transportation, Communications & Highways ..	NA	124	NA	NA	NA	NA	NA	NA
Transportation & Highways ..	NA	NA	118	432	801	913	195	250
Total	12,224	14,146	15,751	23,366	23,122	23,828	13,397	13,569

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TABLE 23. Total Expenditures in the Social Sciences and Humanities, by Performer, 1977-78 to 1984-85

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83(e)	1983-84	1984-85(e)
	(\$'000)							
Intramural	7,728	9,385	10,541	13,429	16,262	16,859	10,349	10,585
Industry	2,179	2,375	3,266	8,131	4,419	4,652	1,894	1,822
Universities	635	275	120	85	69	51	202	202
Hospitals and health organizations	45	62	65	45	49	54	40	40
B.C. Research Council	297	17	-	49	91	106	179	224
Other	1,340	2,032	1,759	1,627	2,232	2,106	733	716
Total	12,224	14,146	15,751	23,366	23,122	23,828	17,397	13,589

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TABLE 24. Current Expenditures on R&D in the Social Sciences and Humanities, by Performer, 1977-78 to 1984-85

Performer	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83(e)	1983-84	1984-85(e)
	(\$'000)							
Intramural	751	982	1,104	723	740	742	529	540
Industry	62	12	56	-	-	-	8	18
Universities	35	30	30	21	20	-	-	-
Hospitals and health organizations	-	-	-	-	-	-	-	-
B.C. Research Council	-	-	-	-	-	-	-	-
Other	21	57	17	-	-	-	-	-
Total	869	1,081	1,207	744	760	742	537	558

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TABLE 25. Current Expenditures on R&D in the Social Sciences and Humanities, by Ministry 1977-78 to 1984-85

Ministry	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83(e)	1983-84	1984-85(e)
	(\$'000)							
Attorney General	149	233	235	153	162	173	125	125
Consumer & Corporate Affairs	8	-	-	-	-	-	-	-
Economic Development	98	50	NA	NA	NA	NA	NA	NA
Education	3	NA	-	-	-	-	-	-
Energy, Mines & Petroleum Resources	NA	-	56	-	-	-	-	-
Health	140	291	456	121	132	97	-	20
Highways	24	NA	NA	NA	NA	NA	NA	NA
Human Resources	NA	97	NA	NA	NA	NA	NA	NA
Industry & Small Business Development	NA	NA	50	20	-	-	25	25
Mines & Petroleum Resources	46	NA	NA	NA	NA	NA	NA	NA
Municipal Affairs	NA	-	-	-	16	22	37	38
Municipal Affairs & Housing	27	NA	NA	NA	NA	NA	NA	NA
Provincial Secretary & Government Services	NA	410	410	450	450	450	350	350
Provincial Secretary & Travel Industry	374	NA	NA	NA	NA	NA	NA	NA
Total	869	1,081	1,207	744	760	742	537	558

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TABLE 26. Ministerial Personnel Engaged in Scientific Activities in the Social Sciences and Humanities, by Activity and by Category, 1977-78 to 1984-85

Activity and Category	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83(e)	1983-84	1984-85(e)
	(person-years)							
Research & development:								
Scientific & professional	15	25	26	15	20	19	10	11
Technical	6	9	8	6	6	6	6	6
Other	7	9	12	4	3	2	1	1
Sub-total	28	43	46	25	29	27	17	18
Related scientific activities:								
Scientific & professional	162	170	168	192	203	193	128	125
Technical	61	62	85	80	79	77	37	37
Other	101	103	100	118	131	120	83	79
Sub-total	324	335	353	390	413	390	248	241
Total social science activities:								
Scientific & professional	177	195	194	207	223	212	138	136
Technical	67	71	93	86	85	83	43	43
Other	108	112	112	122	134	122	84	80
Total	352	378	399	415	442	417	265	259

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TABLE 27. Total Expenditures in the Social Sciences and Humanities, by Sources of Funds, 1983-84

Ministry	Ministerial budget	Transfers from other ministries	Transfers from federal government	From other sources	Total
	(\$'000)				
Attorney General	452	200	28	-	680
Consumer & Corporate Affairs	539	-	-	-	539
Education	1,160	-	-	-	1,160
Environment	35	-	-	-	35
Health	1,088	-	-	-	1,088
Industry & Small Business Development	4,915	31	402	-	5,348
Labour	157	-	-	-	157
Lands, Parks & Housing	322	-	-	-	322
Municipal Affairs	389	-	-	-	389
Provincial Secretary & Government Services	3,061	-	100	-	3,161
Tourism	323	-	-	-	323
Transportation & Highways	195	-	-	-	195
Total	12,636	231	530	-	13,397

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TABLE 28. Total Expenditures in the Social Sciences and Humanities, by Activity and Performer, 1983-84

Activity	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
(\$'000)							
Research & development:							
Current Expenditures:							
In-house	519	NA	NA	NA	NA	NA	519
Contracts	10	8	-	-	-	-	18
Grants	-	-	-	-	-	-	-
Sub-total	529	8	-	-	-	-	537
Capital expenditures	2	NA	NA	NA	NA	NA	2
Related Scientific Activities:							
Current Expenditures	9,234	1,886	202	40	179	733	12,274
Capital Expenditures	584	NA	NA	NA	NA	NA	584
Total	10,349	1,894	202	40	179	733	13,397

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TABLE 29. Total Expenditures in the Social Sciences and Humanities, by Ministry and Performer, 1983-84

Ministry	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
	(\$'000)						
Attorney General	531	-	-	-	-	149	680
Consumer & Corporate Affairs	539	-	-	-	-	-	539
Education	185	350	50	-	-	575	1,160
Environment	35	-	-	-	-	-	35
Health	873	-	150	40	25	-	1,088
Industry & Small Business Development.....	4,066	1,172	2	-	99	9	5,348
Labour	157	-	-	-	-	-	157
Lands, Parks & Housing.....	149	173	-	-	-	-	322
Municipal Affairs	314	75	-	-	-	-	389
Provincial Secretary & Government Services.....	3,161	-	-	-	-	-	3,161
Tourism	278	15	-	-	30	-	323
Transportation & Highways ..	61	109	-	-	25	-	195
Total	10,349	1,894	202	40	179	733	13,397

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TABLE 30. Current Expenditures on R&D in the Social Sciences and Humanities, by Ministry and Performer, 1983-84

Ministry	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
	(\$'000)						
Attorney General	125	-	-	-	-	-	125
Consumer & Corporate Affairs	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-
Environment	-	-	-	-	-	-	-
Health	-	-	-	-	-	-	-
Industry & Small Business Development.....	25	-	-	-	-	-	25
Labour	-	-	-	-	-	-	-
Land, Parks & Housing.....	-	-	-	-	-	-	-
Municipal Affairs	29	8	-	-	-	-	37
Provincial Secretary & Government Services.....	350	-	-	-	-	-	350
Tourism	-	-	-	-	-	-	-
Transportation & Highways ...	-	-	-	-	-	-	-
Total	529	8	-	-	-	-	537

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TABLE 31. Detail of Intramural Expenditures in the Social Sciences and Humanities, 1983-84

Ministry	Current expenditures		Capital expenditures	Total
	Personnel costs	Other costs		
	(\$'000)			
Attorney General	406	125	-	531
Consumer & Corporate Affairs	519	20	-	539
Education	175	10	-	185
Environment	35	-	-	35
Health	816	57	-	873
Industry & Small Business Development	2,314	1,223	529	4,066
Labour	157	-	-	157
Lands, Parks & Housing	144	2	3	149
Municipal Affairs	257	35	22	314
Provincial Secretary & Government Services	2,810	327	24	3,161
Tourism	181	89	8	278
Transportation & Highways	60	1	-	61
Total	7,874	1,889	586	10,349

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TABLE 32. Ministerial Personnel Engaged in Scientific Activities in the Social Sciences and Humanities, by Ministry, 1983-84

Ministry	Research & development			Related scientific activities			
	Scientific & professional	Technical	Other	Scientific & professional	Technical	Other	Total
(person-years)							
Attorney General	2	-	1	4	2	2	8
Consumer & Corporate Affairs	-	-	-	11	-	7	18
Education	-	-	-	5	-	-	5
Environment	-	-	-	1	-	-	1
Health	-	-	-	10	2	19	31
Industry & Small Business Development	1	-	-	54	5	25	84
Labour	-	-	-	2	-	3	5
Lands, Parks & Housing	-	-	-	2	-	2	4
Municipal Affairs	1	-	-	5	-	2	7
Provincial Secretary & Government Services	6	6	-	30	28	20	78
Tourism	-	-	-	3	-	1	4
Transportation & Highways	-	-	-	1	-	2	3
Total	10	6	1	128	37	83	248

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TABLE 33. Objectives of Expenditures in the Social Sciences and Humanities, by Ministry, 1983-84

Ministry	Advancement of science	Energy & fuels <u>Fossil</u> fuels	Environmental Issues	Health
(\$'000)				
Attorney General	-	-	-	-
Consumer & Corporate Affairs	-	-	-	-
Education	-	-	-	-
Environment	-	-	-	-
Health	-	-	-	1,088
Industry & Small Business Development	25	176	-	182
Labour	-	-	-	-
Lands, Parks & Housing	-	-	10	-
Municipal Affairs	-	-	-	-
Provincial Secretary & Government Services	350	-	-	-
Tourism	-	-	-	-
Transportation & Highways ...	-	-	-	-
Total	375	176	10	1,270

Government of British Columbia

TABLE 33. Objectives of Expenditures in the Social Sciences and Humanities, by Ministry, 1983-84 - Continued

Ministry	Industrial & economic development					
	Agriculture	Fisheries	Forestry	Manufacturing	Minerals	Other
	(\$'000)					
Attorney General	-	-	-	-	-	-
Consumer & Corporate Affairs	-	-	-	-	-	-
Education	-	-	-	-	-	-
Environment	-	-	-	-	-	-
Health	-	-	-	-	-	-
Industry & Small Business Development	155	123	904	2,016	550	246
Labour	-	-	-	-	-	-
Lands, Parks & Housing	50	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-
Provincial Secretary & Government Services	-	-	-	-	-	-
Tourism	-	-	-	-	-	-
Transportation & Highways ...	-	-	-	-	-	-
Total	205	123	904	2,016	550	246

Government of British Columbia

TABLE 33. Objectives of Expenditures in the Social Sciences and Humanities, by Ministry, 1983-84 - Concluded

Ministry	Social development & related areas				Transpor- tation	Other	Total
	Culture, sport & recreation	Education	Human resources	Urban & regional studies			
(\$'000)							
Attorney General	-	-	-	-	60	4	680
Consumer & Corporate Affairs	-	-	-	-	-	-	539
Education	-	1,160	-	-	-	-	1,160
Environment	35	-	-	-	-	-	35
Health	-	-	-	-	-	-	1,088
Industry & Small Business Development	91	182	178	375	145	-	5,348
Labour	-	-	157	-	-	-	157
Lands, Parks & Housing	-	-	-	252	-	-	322
Municipal Affairs	-	-	-	389	-	-	389
Provincial Secretary & Government Services	1,367	-	-	-	-	-	3,161
Tourism	323	-	-	-	-	-	323
Transportation & Highways ..	-	-	-	-	195	-	195
Total	1,816	1,342	335	1,016	400	4	13,397

Government of British Columbia

TABLE 34. Objectives of Expenditures in the Social Sciences and Humanities, by Objective and Activity, 1983-84

Objective	Intramural		Extramural		Total
	Research & development	Related scientific activities	Research & development	Related scientific activities	
(\$'000)					
Advancement of science	375	-	-	-	375
Energy & fuels:					
Fossil fuels	-	134	-	42	176
Environmental issues	-	10	-	-	10
Health	-	1,011	-	259	1,270
Industrial & economic development:					
Agriculture	-	118	-	87	205
Fisheries	-	94	-	29	123
Forestry	-	687	-	217	904
Manufacturing	-	1,533	-	483	2,016
Minerals	-	418	-	132	550
Other	-	187	-	59	246
Social development & related areas:					
Culture, sport & recreation	-	1,749	-	67	1,816
Education	-	323	-	1,019	1,342
Human resources	-	295	-	40	335
Urban & regional studies	31	697	8	280	1,016
Other	65	2,395	-	149	2,609
Transportation	60	163	-	177	400
Other	-	4	-	-	4
Total	531	9,818	8	3,040	13,397

Government of British Columbia

TABLE 35. Total Expenditures in the Social Sciences and Humanities, by Activity or Performer, 1984-85(e)

Ministry	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
(\$'000)							
Research and Developments:							
Current Expenditures:							
In-house	540	NA	NA	NA	NA	NA	540
Contracts	10	8	-	-	-	-	18
Grants	-	-	-	-	-	-	-
Sub-Total	550	8	-	-	-	-	558
Capital Expenditures	1	NA	NA	NA	NA	NA	1
Related Scientific Activities:							
Current Expenditures	9,474	1,814	202	40	224	716	12,470
Capital Expenditures	560	NA	NA	NA	NA	NA	560
Total	10,585	1,822	202	40	224	716	13,569

Government of British Columbia

TABLE 36. Total Expenditures in the Social Sciences and Humanities, by Ministry and Performer, 1984-85(e)

Ministry	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
	(\$'000)						
Attorney General	589	-	-	-	-	107	696
Consumer & Corporate Affairs	450	-	-	-	-	-	450
Education	100	150	50	-	-	600	900
Environment	13	-	-	-	-	-	13
Health	919	-	150	40	25	-	1,134
Industry & Small Business Development	4,066	1,172	2	-	99	9	5,348
Labour	157	-	-	-	-	-	157
Land, Parks & Housing	144	260	-	-	-	-	404
Municipal Affairs	316	75	-	-	-	-	391
Provincial Secretary & Government Services	3,453	-	-	-	-	-	3,453
Tourism	278	15	-	-	100	-	393
Transportation & Highways ...	100	150	-	-	-	-	250
Total	10,585	1,822	202	40	224	716	13,589

Government of British Columbia

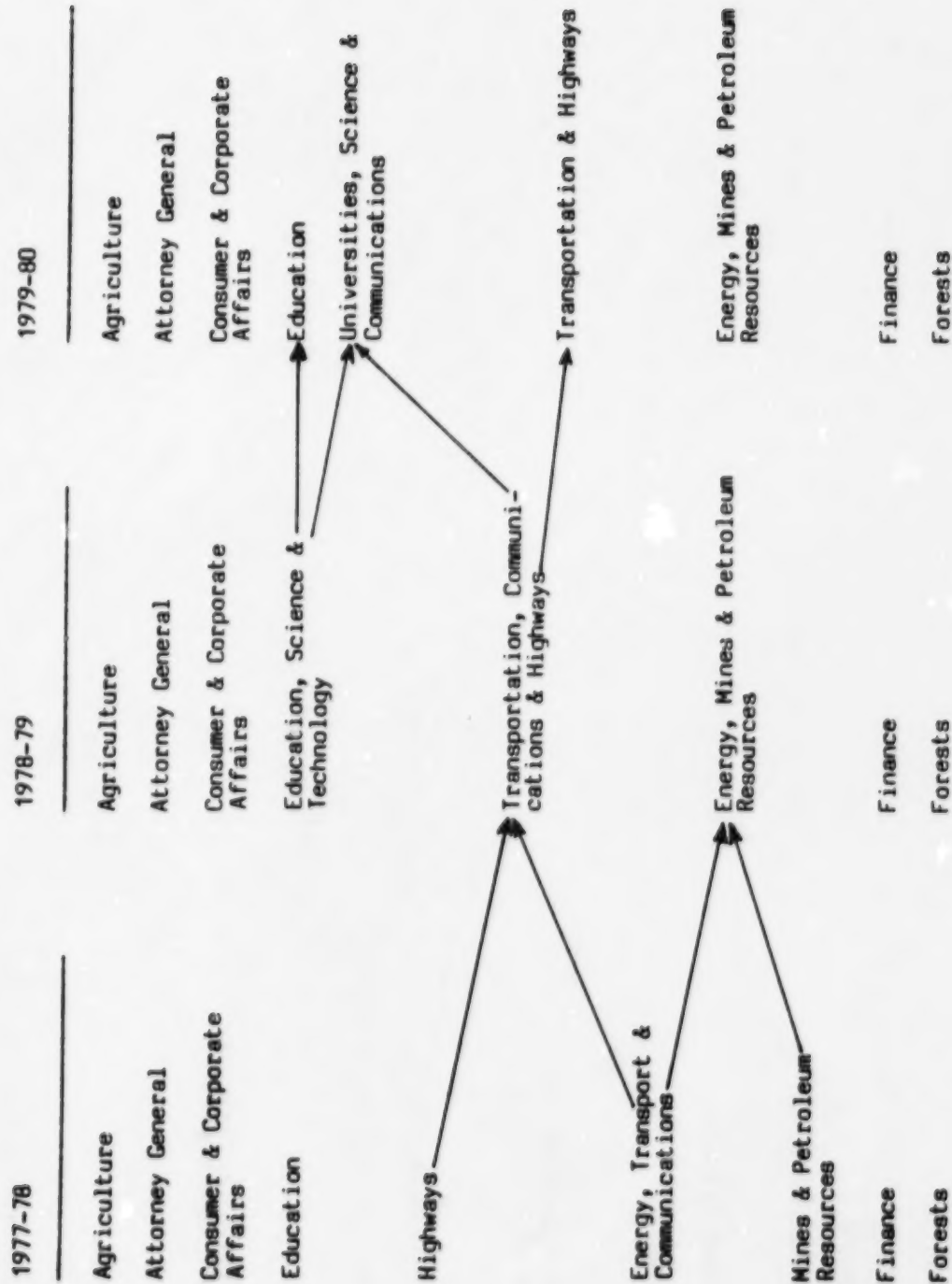
TABLE 37. Current Expenditures on R&D in the Social Sciences and Humanities, by Ministry and Performer, 1984-85(e)

Ministry	Intramural	Industry	Universities	Hospitals & health organizations	B.C. Research Council	Other	Total
	(\$'000)						
Attorney General	125	-	-	-	-	-	125
Consumer & Corporate Affairs	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-
Environment	-	-	-	-	-	-	-
Health	20	-	-	-	-	-	20
Industry & Seall	-	-	-	-	-	-	-
Business Development	25	-	-	-	-	-	25
Labour	-	-	-	-	-	-	-
Lands, Parks & Housing	-	-	-	-	-	-	-
Municipal Affairs	30	8	-	-	-	-	38
Provincial Secretary & Government Services	350	-	-	-	-	-	350
Tourism	-	-	-	-	-	-	-
Transportation & Highways ...	-	-	-	-	-	-	-
Total	550	8	-	-	-	-	558

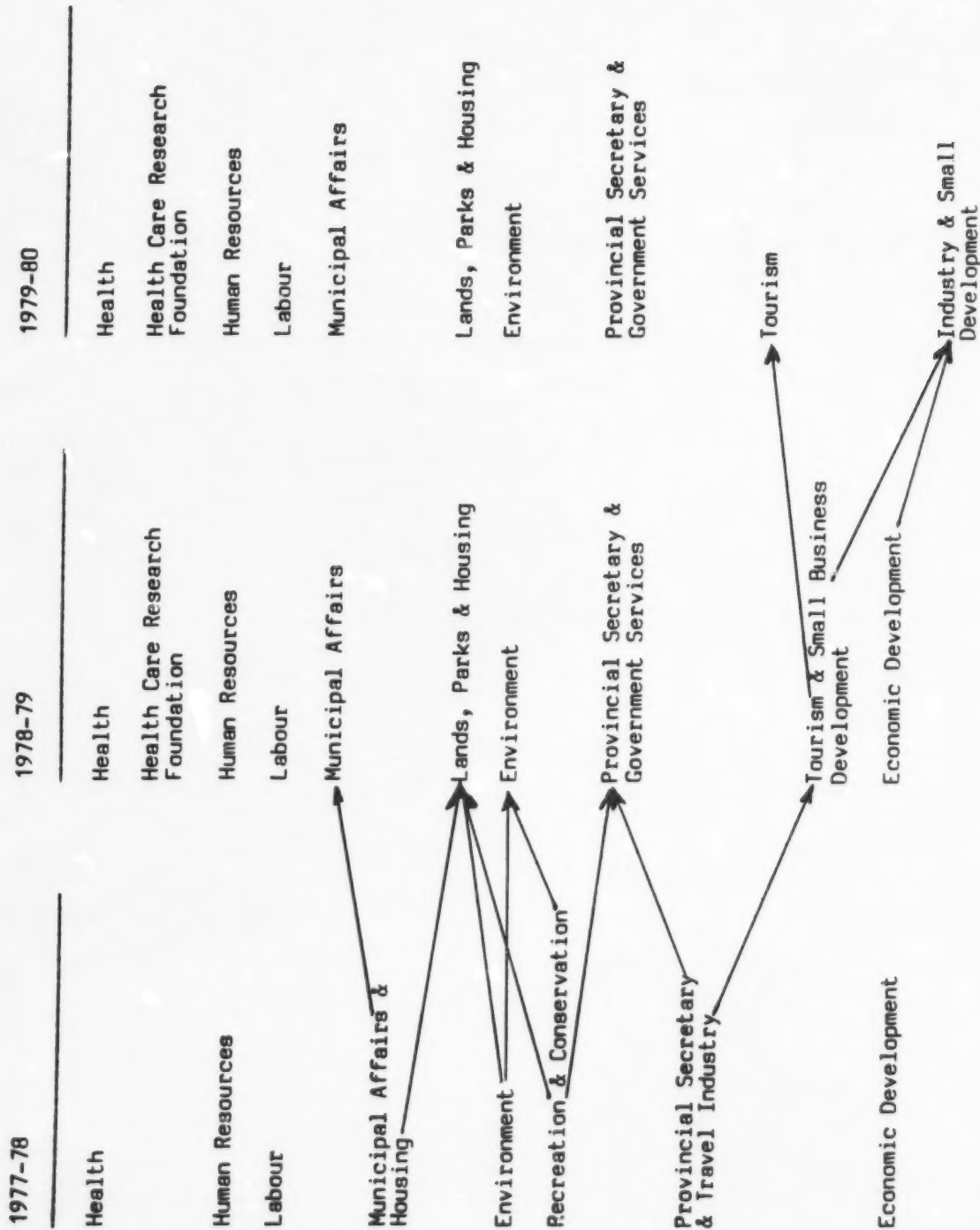
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APPENDIX

B.C. Ministries Included in the Provincial Government Science Survey



B.C. Ministries Included in the Provincial Government Science Survey - Continued



B.C. Ministries Included in the Provincial Government Science Survey - Concluded

1980-81	1981-82	1982-83 (1)	1983-84
Agriculture	Agriculture & Food	Agriculture & Food	Agriculture & Food
Attorney General	Attorney General		Attorney General
Consumer & Corporate Affairs	Consumer & Corporate Affairs		Consumer & Corporate Affairs
Education	Education		Education
Universities, Science & Communications	Universities, Science & Communications	Universities, Science & Communications	Universities, Science & Communications
Science Council of B.C.	Science Council of B.C.	Science Council of B.C.	Science Council of B.C.
Transportation & Highways	Transportation & Highways	Transportation & Highways	Transportation & Highways
Energy, Mines & Petroleum Resources	Energy, Mines & Petroleum Resources	Energy, Mines & Petroleum Resources	Energy, Mines & Petroleum Resources
Finance	Finance		
Forests	Forests	Forests	Forests
Health	Health	Health	Health
Health Care Research Foundation	Health Care Research Foundation	Health Care Research Foundation	Health Care Research Foundation
Human Resources	Human Resources		
Labour	Labour		Labour

continued.....

B.C. Ministries Included in the Provincial Government Science Survey - Concluded

1980-81	1981-82	1982-83 (1)	1983-84
Municipal Affairs	Municipal Affairs		Municipal Affairs
Lands, Parks & Housing Environment	Lands, Parks & Housing Environment	Lands, Parks & Housing Environment	Lands, Parks & Housing Environment
Provincial Secretary & Government Services	Provincial Secretary & Government Services	Provincial Secretary & Government Services	Provincial Secretary & Government Services
Tourism	Tourism		Tourism
Industry & Small Business Development	Industry & Small Business Development		Industry & Small Business Development

(1) Only Ministries having natural science activities were surveyed.

DEFINITIONS

This report covers those scientific and technological activities which involve the generation, dissemination and application of new scientific and technological knowledge. The central activity is research and experimental development (R&D). In addition, there are a number of related scientific activities (RSA) which are considered in less detail.

R&D is creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications.

It requires the acquisition of knowledge and not just information. New knowledge involves the integration of newly acquired information into existing hypotheses, the formulation and testing of new hypotheses or the re-evaluation of existing observations.

The major related scientific activities are technical surveys, statistical surveys, information services, special services and studies, and museum services. Statistical surveys, information services and museum services are largely self-explanatory.

Technical surveys are activities directed towards the exploration and systematic description of the earth and its natural resources. The activities include the gathering, processing, collating and analyzing of data on natural phenomena except when part of a research project or a museum service. The preparation of maps and survey reports, their printing and cataloguing, are also included.

Special services and studies in the natural sciences are activities directed towards the establishment of national and provincial standards for materials, devices, products and processes; the calibration of secondary standards; non-routine quality testing; feasibility studies and demonstration projects. In the social sciences, special services and studies are systematic investigations carried out in order to provide information needed for planning or policy formulation, including feasibility studies, and demonstration projects.

Activities are either natural sciences or social sciences and humanities. **Natural sciences** consist of disciplines concerned with the understanding, exploring, developing or utilizing the natural world. Included are the engineering, mathematical, environmental, life and physical sciences. **Social sciences and humanities** include all disciplines involving the study of human actions and conditions and the social, economic and institutional mechanisms affecting humans. Included are such disciplines as anthropology, business administration and commerce, communications, criminology, demography, economics, geography, history, languages, literature and linguistics, law, library science, philosophy, political science, psychology, religious studies, social work, sociology and urban and regional studies.

Five performing sectors are identified besides the B.C. Research Council. Intramural refers to the provincial ministry or agency performing a scientific activity. Industry is largely private corporations but also includes crown corporations with a commercial function (e.g., power utilities) and industrial research institutes not controlled by another institution. Universities cover post secondary educational institutions and affiliated teaching and research facilities. Hospitals and health organizations are health organizations such as the Heart Foundation and hospitals which do not belong to the universities sector. Other includes non-resident performers of scientific activities funded by the provincial government, as well as recipients not covered elsewhere such as the Federal Government, other provincial ministries and individuals.

Expenditures are either current or capital. **Current expenditures** include those costs for personnel, transportation and communications, information, professional and special services, rentals, purchased repair and upkeep, utilities, materials and supplies. **Capital expenditures** are those on the construction and acquisition of land, buildings, machinery and equipment. Total expenditures include current plus capital.

THE RESPONDENTS

Agriculture and Food - Co-ordinator: Grant Thompson (387-5121)

The main identifiable scientific activities are the Demonstration of Agricultural Technology and Economics (D.A.T.E.) and the Agricultural and Rural Development Subsidiary Agreement programs (A.R.D.S.A.).

Attorney General - Co-ordinator: Sandra Edelman (384-4434)

Units such as the Law Reform Commission, Counter Attacks, the B.C. Police Commission, the Corrections Branch and the Policy Planning Branch have reported science expenditures. Approximately 82% of the expenditures are spent on related scientific activities.

Consumer and Corporate Affairs - Co-ordinator: Bill Smith (387-1721)

Scientific expenditures were incurred by the Policy Legislation and Program Planning Division.

Education - Co-ordinator: Mr. R.C. McCandless (387-4611)

About 84% of the Ministry's science expenditures are extramural. The major performers of these activities are the Education Research Institute of B.C. (E.R.I.B.C.) and the Training Access Program Development.

Energy, Mines and Petroleum Resources - Co-ordinator: T. Chatton (387-1368)

Three different divisions are included in this Ministry's science expenditures: Petroleum Resources, Mineral Resources and Conservation and Renewable Energy. The Ministry's intramural expenditures are split fairly even between R&D and RSA (technical surveys and information services). They also support special services and studies in the industry sector.

Environment - Co-ordinator: Dr. Bandy (387-1818)

Dr. Bandy collected statistics from: Environmental Laboratory, Fish and Wildlife, Marine Resources, Surveys and Resource Mapping, Waste Management and Water Management. This Ministry is the largest performer of science expenditures in the B.C. Government. Technical surveys is the predominant activity.

Finance - Co-ordinator: Brenda Eaton (387-5801)

No scientific activities are reported by the Ministry of Finance.

Forests - Co-ordinator: Winston Mai (387-1215)

Six different branches report scientific activities in this Ministry: Engineering, Inventory, Protection, Range Management, Research and Silviculture. Forests is the largest performer of R&D in the B.C. Government of which 91% is performed intramurally.

Health - Co-ordinator: Bill Lawrence (386-3166)

Scientific activities have been identified in four areas: Policy Planning and Legislation, Vital Statistics, Hospital Programs and the Library. Vital Statistics is the largest performer.

Health Care Research Foundation - Co-ordinator: Catherine Graham (273-0788)

The Foundation makes awards available for the support of medical and health care research related to provincial problems.

Human Resources - Co-ordinator: J. Noble (387-3121)

No scientific activities are reported by the Ministry of Human Resources.

Industry and Small Business Development - Co-ordinator: Roy Whitaker (387-4521)

The Central Statistics Bureau supports all scientific activities of this Ministry. Work performed involves development studies on industries and some economic forecasting and policy analysis. Of this Ministry's activities 22% are contracted out to the industry sector.

Labour - Co-ordinator: Johan Schuyff (389-3022)

The Policy and Research Branch and the Policy and Planning Womens' Program performs the scientific activities of this Ministry.

Lands, Parks and Housing - Co-ordinator: Mr. I. Cockburn (387-1057)

The Housing Policy and Programs Branch, Parks Program Branch and the Land Program Branch reported science activities this year.

Municipal Affairs - Co-ordinator: Brian Walisser (387-5925)

The Policy and Research Branch carries out and funds studies on such topics as the fiscal impact of residential growth, implications of large scale resource developments and community development.

Provincial Secretary and Government Services

Four performers of scientific activities are included. The largest is the Provincial Museum (R. Edwards, 387-3701), followed by the Provincial Archives (D. Mason, 387-5885), Recreation and Sports Branch (Bob Yates 387-1011) and the Resource Management Division (Russell Irvine 387-1011). Most science activities of the Ministry are Social Sciences.

Science Council of B.C. - Co-ordinator: Catherine Graham (273-0788)

The Council makes awards for research projects, mainly to researchers in the universities and industry, although the B.C. Research Council and other institutions also receive support. In addition, the Science Council has the Graduate Research Engineering and Technology (GREAT) Awards and the Industrial Post-doctoral Fellowship (IPDF) programs. The Research Secretariat of B.C. provides administrative services to the Science Council and coordinates the procedures for the granting programs of the Science Council and the Health Care Research Foundation.

Tourism - Co-ordinator: Mick Collins (387-6780)

The Policy, Development and Planning Branch reports a number of activities, including model development and maintenance, statistical surveys, performance indicators and the development of tourism policies.

Transportation and Highways - Co-ordinator: Debra Illing (387-5996)
Mr. M.G. Elston (387-6742)

The Transport Policy Analysis Branch co-ordinates and disseminates information on transport policy. The Geotechnical and Materials Engineers Branch perform mostly special services and studies.

Universities, Science and Communications - Co-ordinator: Barry Stevenson (387-1239)

The Ministry provides funds to the Science Council of B.C. as well as grants to the Discovery Foundation and the B.C. Research Council. Through the Science and Technology Division it also develops, plans and programs recommendations for science policy and develops an information base on scientific activities in the province.

Indicators of Provincial Scientific Activities

1. Population and Income

Province	Population January 1984(1)	Personal Income per capita 1982(2)	Provincial Gross Domestic Product per capita 1982(3)	RANK	RANK	RANK
	(000)	(\$)	(\$)			
Newfoundland	579	8,580	8,108	10	9	9
Prince Edward Island	125	8,894	7,945	9	10	10
Nova Scotia	866	10,090	9,582	7	7	7
New Brunswick	710	9,229	9,331	8	8	8
Quebec	6,529	12,021	12,748	5	5	6
Ontario	8,887	13,842	15,436	2	2	4
Manitoba	1,052	11,987	13,248	6	6	5
Saskatchewan	1,000	12,372	15,702	4	4	2
Alberta	2,345	14,025	22,624	1	1	1
British Columbia	2,852	13,811	15,678	3	3	3
Canada(4)	25,016	12,839	14,775			

- (1) Canadian Statistical Review, Statistics Canada, Catalogue No. 11-003E, March 1984.
 (2) National Income and Expenditure Accounts, 1968-1982, Statistics Canada, Catalogue No. 13-201.
 (3) Provincial Economic Accounts, Experimental Data, 1967-1982, Statistics Canada, Catalogue No. 13-213.
 (4) Includes the Yukon and Northwest Territories.

Indicators of Provincial Scientific Activities

2. Universities

Province	Graduate students per ten thousand population (15 years and over) 1982-83(1)	Sponsored research in universities per capita, 1982-83(2)	Rank	Rank
Newfoundland	13	21	7	6
Prince Edward Island	-	4	10	10
Nova Scotia	26	22	4	5
New Brunswick	10	17	9	9
Quebec	28	24	2	4
Ontario	28	31	1	1
Manitoba	26	31	3	3
Saskatchewan	12	19	8	8
Alberta	22	31	5	2
British Columbia	20	20	6	7
Canada	25	26		

(1) Full-time enrolment for graduate degrees, per ten thousand population (15 years and over) **Universities Enrolment and Degrees, 1982-83**, Statistics Canada, Catalogue No. 81-204, and Postcensal Estimate of Population by Sex and Age for Canada and the Provinces, June, 1982, Population Estimates Section, Demography Division, Statistics Canada.

(2) **Financial Statistics of Universities and Colleges, 1982-83**, Canadian Association of University Business Officers.

Indicators of Provincial Scientific Activities

3. Industry

Province	Value added by manufacturing activity per capita, 1981(1)	Rank	(\$)	Current intramural industrial R&D expenditures per employee in primary and secondary industry, 1982(2)	Rank
Newfoundland	951	8	-	-	9
Prince Edward Island	606	10	-	-	10
Nova Scotia	1,521	6	77	77	7
New Brunswick	1,454	7	67	67	8
Quebec	3,114	2	666	666	2
Ontario	4,169	1	900	900	1
Manitoba	1,943	4	181	181	6
Saskatchewan	824	9	208	208	5
Alberta	1,709	5	633	633	3
British Columbia	2,328	3	311	311	4
Canada(3)	2,954		662	662	

(1) Manufacturing Industries of Canada; National and Provincial Areas, 1981, Statistics Canada, Catalogue No. 31-203.

(2) Results of 1982 Industrial R&D survey, Science and Technology Statistics Division, Statistics Canada and The Labour Force, April, 1984, Statistics Canada, Catalogue No. 71-001.

(3) Includes the Yukon and Northwest Territories.

Indicators of Provincial Scientific Activities

4. Federal Government

Province	Expenditures on intramural natural science activities 1982-83(1)	Federal personnel 1982-83(1)	Contracts awarded by the Science Procurement Sector, Department of Supply and Services, 1983-84(2)	Person-years	No.	(\$'000,000)
Atlantic Provinces	157	2,432			818	26
Quebec	98(3)	1,546(3)			399	54
Ontario	209(4)	4,407(4)			1,533	112
Ottawa-Hull	583	10,727			NA	NA
Manitoba	96	1,637			119	5
Saskatchewan	32	686			71	6
Alberta	64	1,308			254	14
British Columbia	88	1,673			842	39
Canada(5)	1,328	24,452			4,060	256

- (1) Federal Scientific Establishments, 1982-83^{iv}, Science and Technology Statistics Division, Statistics Canada.
 (2) Research and Development Bulletin, April 1984, Supply and Services.
 (3) Excluding Hull.
 (4) Excluding Ottawa.
 (5) Includes the Yukon and Northwest Territories.

Indicators of Provincial Scientific Activities

5. Provincial Research Organizations

Province	Total expenditures on science and Technology, 1983(1)	Rank
	(\$'000)	
Nova Scotia	5,380	8
New Brunswick	5,870	6
Quebec	19,366	2
Ontario	18,686	3
Manitoba	5,704	7
Saskatchewan	10,294	4
Alberta	37,373	1
British Columbia	7,905	5
Total	110,578	

(1) "The Provincial Research Organizations, 1983", Science Statistics, Vol. 8, No. 11, Statistics Canada, Catalogue No. 88-001.

Indicators of Provincial Scientific Activities

6. Sectors Performing R&D, by Region, 1982(1)

Performing sector	Atlantic provinces	Quebec	Ontario	British Columbia	Other Western provinces	Canada (2)
(3000,000)						
Federal government ...	118	107	588	59	169	1,042
Provincial government ..	2	23	48	13	27	113
Provincial research organizations	5	9	12	4	27	57
Total government	125	139	648	76	223	1,212
Industry	16	559	1,349	122	319	2,381
Universities	78	261	325	91	198	953
Private non-profit ...	-	14	26	1	4	45
All sectors	219	973	2,348	290	744	4,591

(1) Gross Domestic Expenditures on R&D, by Region, 1979-1982, Science & Technology Statistics Division, Statistics Canada.

(2) Includes the Yukon and Northwest Territories.

NOTE: Totals may not add due to rounding.

Indicators of Provincial Scientific Activities

7. Sectors Funding R&D, by Region of Performance, 1982(1)

Funding sector	Atlantic provinces	Quebec	Ontario	British Columbia	Other Western provinces	Canada (2)
	(\$000,000)					
Federal government	153	252	873	110	266	1,655
Provincial government ..	6	78	116	21	94	313
Provincial research organizations	-	1	1	-	-	3
Total government	159	331	990	131	360	1,971
Industry	15	444	1,082	99	255	1,908
Universities	42	128	116	43	91	421
Private non-profit	2	23	44	6	11	86
Foreign	1	47	116	11	27	205
All sectors	219	973	2,348	290	744	4,591

(1) "Gross Domestic Expenditures on R&D, by Region, 1979-1982", Science & Technology Statistics Division, Statistics Canada.

(2) Includes the Yukon and Northwest Territories.

NOTE: Totals may not add due to rounding.

Indicators of Provincial Scientific Activities

8. Gross Domestic Expenditures on Research and Development, in British Columbia, 1982
Natural Sciences and Engineering

Performing sector							
<u>Government</u>				Business enterprise	Higher education	Private no-profit	Total
Federal	Provincial	PRO	Total				
(\$'000,000)							
Governments							
Federal	59	-	1	60	13	37	110
Provincial	-	13	1	14	2	5	21
PROP	-	-	-	-	-	-	-
Sub-Total	59	13	2	74	15	42	131
Business Enterprise ..							
Higher education	-	-	2	2	97	-	99
Private non-profit ...	-	-	-	-	-	43	43
Foreign	-	-	-	-	-	5	6
	-	-	-	-	10	1	11
Total	59	13	4	76	122	91	290
						1	

Source: "Gross Domestic Expenditures on R&D, by Region, 1979-1982", Science and Technology Statistics Division, April 1984.

NOTE: Totals may not add due to rounding.

Provincial Co-ordinators

Five provincial governments sponsored the Science and Technology Statistics Division in the collection of similar scientific activity data. Below is a list of co-ordinators for the various sponsoring departments/ministries.

Mr. D. Clarke
Co-ordinator - Science & Technology
Planning, Development Branch
Department of Commerce & Development
P.O. Box 6000
Fredericton, N.B.
E3B 5H1 Tel.: (506) 453-2489

Mr. Gordon Stokell
Policy Advisor
Provincial Secretariat for
Resources Development
Room 1605, Whitney Block
Queen's Park
Toronto, Ontario
M7A 1A2 Tel.: (416) 965-6366

Mr. Dale W. Botting
Executive Director
Saskatchewan Science & Technology
Government Research, Science & Technology
T.C. Douglas Building
3475 Albert Street
Regina, Saskatchewan
S4S 6X6 Tel.: (306) 565-2944

Dr. Bastien Heemsbergen
Director
Planning Secretariat
Alberta Advanced Education
Devonian Building
11160 Jasper Avenue
Edmonton, Alberta
T5K 0L1 Tel.: (403) 427-4845

Mr. B. Stevenson
Director
Science and Technology Division
Ministry of Universities, Science
and Communications
3rd Floor, 818 Fort Street
Victoria, B.C.
V8V 1X4 Tel.: (604) 387-4561

In August 1983, Statistics Canada formed a Science and Technology Statistics Division with staff from both Statistics Canada and the Ministry of State for Science and Technology. The basic mission of the Division is to assure the availability of pertinent statistical information in support of the development of science and technology in Canada.

Activities of the Division are described in a semi-annual report distributed free of charge entitled **Activities of the Science and Technology Statistics Division**. This report is published in June and December each year (First issue June 1984).

Information is disseminated in a series of reports including monthly service bulletins, occasional background papers and annual reports which are described below.

Catalogue

88-001	Science Statistics
88-201	Science and Technology Indicators, 1984
88-202	Industrial Research and Development Statistics, 1982
88-203	Resources for Research and Development in Canada, 1982
88-204E	Federal Scientific Activities, 1984-85
88-502E	International Payments and Receipts for Technology
88-503E	Technology and Commodity Trade
88-505E	Industrial Productivity and Research and Development Indicators
88-506E	A Framework for Measuring Research and Development Expenditures in Canada
88-507E	An Indicator of Excellence in Canadian Science Summary Report

Uncatalogued

"Federal Government Expenditures on Activities in the Natural Sciences 1963-64 to 1984-85"

"Federal Government Expenditures on Activities in the Social Sciences and Humanities 1970-71 to 1984-85"

"Federal Personnel Engaged in Scientific Activities 1976-77 to 1984-85"

"Federal Science Expenditures and Personnel 1984-85"

"Federal Scientific Establishments 1982-83"

"Gross Domestic Expenditures on R&D, by Region, 1979-1982"

"Calculation of R&D Expenditures in the Higher Education Sector, by Province, 1982"